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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,785	10/22/2001	Gang Sun	18062G-004100US	6976

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EXAMINER

EINSMANN, MARGARET V

ART UNIT PAPER NUMBER

1751

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/037,785

Applicant(s)

SUN ET AL.

Examiner

Margaret Einsmann

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-8, 10-15 and 35-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-8, 10-13, 15, 36 and 37 is/are rejected.
- 7) ☐ Claim(s) 14 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejection of claim 3 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been mooted by applicant's amendment to the claim

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 10-13,15, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer et al., US 6,645,569 A1. Cramer discloses a process of coating textile materials including all natural and synthetic textiles with inorganic nanoparticles including metal oxide particles. See col 3 line 62 and all of col 4 for the kinds of textile materials reading on claims 2-5 and 7. Regarding claim 6, that is merely an intended use and is well within the scope of this patent, which specifically mentions the use of the nanoparticles as coatings for diapers and other disposable absorbent articles. See claims. Regarding the limitation of claim 8, , particle size is disclosed in

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column 9 third full paragraph. Column 13 line 19 begins a discussion of inorganic metal oxide particles reading on claims 10-13. The examiner notes that a metal oxide is a particle that contains a metal, thus reading on claims 12 and 13. At least silicon and zirconium are specifically mentioned in column 13. Regarding claim 15, the claimed utilities are described in many places including col 1 line 48 to col 2 line 16, col 13 lines 25-30 and col 29 lines 35-41.

The patent differs from the claims because patentee does not state that the nanometer particles are imbedded, or that they are distributed at or near the surface of said textile and polymer system.

It would have been obvious to the skilled artisan that Cramer's nanoparticles are distributed at or near the surface of the textile and polymer system because patentees teach several methods of coating which result in the particles being impregnated into the surface, yet remain mostly on the surface, and also teach methods of enhancing the ability of the surface of the material to receive the coating materials. One of these methods is to wet the surface of the textile with surfactants. See col 23 line 51 et seq. Another way is to increase the surface energy of the soft surface onto which the nanoparticles will be applied by corona discharge, plasma treatment, UV radiation, etc. See col 24 lines 29 et seq. Another way is to provide a pressure gradient to the material, reducing the surface tension of the coating material. See col 25 lines 50 et seq. In this section, the use of pressure rollers is exemplified. The examiner notes that applicant use a padding process, which is an analogous process of using pressure rollers to impregnate the textile surface with the nanoparticles. Accordingly, absent

evidence to the contrary, Cramer's nanoprocesed textile materials are essentially equivalent to the claimed textile materials.

### ***Response to Arguments***

Applicant's arguments filed 9/20/04 regarding the rejection of the claims as obvious over Cramer have been fully considered but they are not persuasive. Applicant argues (1) that there is no motivation to modify the reference. Applicant states that Cramer is concerned with modifying surface properties of all types of hard and soft surfaces. Applicant argues that Cramer provides multiple layers of nanoparticles that provide a benefit to the fabric. Applicant is referring to one embodiment while ignoring the places cited in the rejection. Patentee provides several methods of applying the nanoparticle "coating" to the surface. He reduces surface tension, and includes high energy treatments in order to provide more durable properties "in order to convert the transient properties of such treatments to more durable properties (col 24 lines 63-65). Is this not a teaching of imbedding the particles into the surface of the substrate. Note also column 25 lines 1-25 which is concerned with high surface energy is used to wet the surface to provide more durable properties. Note also that patentee discloses adding the nanoparticles during a washing or rinsing cycle, wherein the drying process which follows results in the particles being imbedded into the fabric. (Col 27 line 60 to col 28 line 10. However, the use of nip rollers in col 25 line 50 is certainly evidence that patentee uses a process akin to applicant's in which case the particles which have been coated on the surface are imbedded into the fiber surface in the same way that applicant's nanoparticles are. Applicant argues (2) that there is no reasonable

expectation of success in the modification suggested by the examiner. The examiner is not suggesting a modification but has pointed to several places in the disclosure of Cramer wherein he uses processes which result in the particles of the coating being imbedded into the textile, for example, use of nip rollers, impregnating during a wash or drying cycle and then drying, using high surface energy processes to wet the surface and provide durable properties. Applicant argues (3) that the reference does not teach the limitation of an embedded nanoparticle. The examiner respectfully disagrees. All of the processes above result in the nanoparticle being embedded. In fact since patentee teaches enduring properties, he is ipso facto teaching that the particles are imbedded. His purpose is to provide long lasting properties to his articles.

Claims 1, 6, 8 10-13, 15, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over CN 1241661(Abstract) and over CN 1306117A (Abstract). Silver and silver oxide are between or on fabric fibers to treat infection from wounds and fungi. See abstracts of both patents. It would have been obvious to the skilled artisan that the nanoparticles are imbedded at least in the surface of the fabric absent evidence to the contrary. A translation will be provided for these references, which may result in the rejection of further claims. For example the type of textile material is not disclosed in the abstracts.

### ***Response to Arguments***

Applicant's arguments filed 9/20/04 regarding the rejection of the claims as obvious over CN1241661 and over 1306117A have been fully considered but they are

not persuasive. In the first place, applicant appears to have misinterpreted the above as a combination rejection when in fact it is a rejection of the claims over either of the above patents. In other words it is two rejections. Applicant has not argued each rejection independently.

The remarks below are directed to the translations of the two references which are included with this action. Applicant states that CN 1241662 does not teach the limitations as claimed. The examiner did not reject the claims as being anticipated but as being obvious over this reference which teaches in the abstract that the nanoparticles are between or on the fabric fibers. Noting the Implementation examples on pages 20 and 21, we see that silver oxide and silver are formed in situ in the fabric by immersing the fabric in solution of silver nitrate and oxidizing agent. The fabric is then ironed or thermally compressed until yellowish-brown. The yellow brown color indicates that the oxidation has taken place and the nanoparticles are indeed on the surface. Since the fabric was immersed in the treating solution, there are necessarily nanoparticles imbedded in the fabric.

Regarding CN 1306117, the implementation method is a padding method which is the only method disclosed by applicant for imbedding the particles into the fabric.

Note page 21 where it states, "fully soak and roll" the cotton with an extraction rate of 60%. After that the cloth is dried. That is the same method as used by applicant. Absent evidence to the contrary, the product produced is a variation of the claimed product wherein the nanoparticles are distributed in a gradually diluted pattern, having a higher density near or at the surface of said textile and polymer system.

Claims 1, 6, 8 10-13, 15, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tedeco S. A., FR 2799392. Nanoparticles of oxides of tin, antimony, indium and cadmium are formed and textiles treated therewith. See abstract.

Beginning on page 17 of the patent itself, there are examples of treating textiles with said nanoparticles. In example 2.1, nylon is treated in a bath of the dispersion of example 1 and heated. In examples 2.2, 2.3 and 2.4 nylon is treated with different dispersions in the same manner. Examples 2.5 and 2.6 treat polyester in the same manner. Patentee do not state that the nanoparticles are imbedded or to what extent the particles remain on the surface of the textile. It would have been obvious to the skilled artisan that the particles are imbedded in the textile and mainly remain on the surface, especially in the polyester, since the dispersion would not penetrate fully into the textile at the temperature of treatment, which appears to be room temperature, as it is known that polyester must be treated at high temperature and pressure, normally in a thermosol process, in order to open the textile for a disperse dye to penetrate into the textile.

### ***Response to Arguments***

Applicant's arguments filed 9/20/04 regarding the rejection of the claims as obvious over Tedesco have been fully considered but they are not persuasive. Applicant states that patentee does not teach the limitations of the claims. Since applicant applies



the nanoparticles to the textile via a bath and heats the textile, (see above rejection) the textiles are impregnated with the nanoparticles.

***Allowable Subject Matter***

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Double Patenting***

Claim 38 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 14. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret Einsmann whose telephone number is 571-272-1314. The examiner can normally be reached on 7:00 AM -4:30 PM M-W and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-0994.

  
Margaret Einsmann  
Primary Examiner  
Art Unit 1751

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November 17, 2004